Reducing Manipulability

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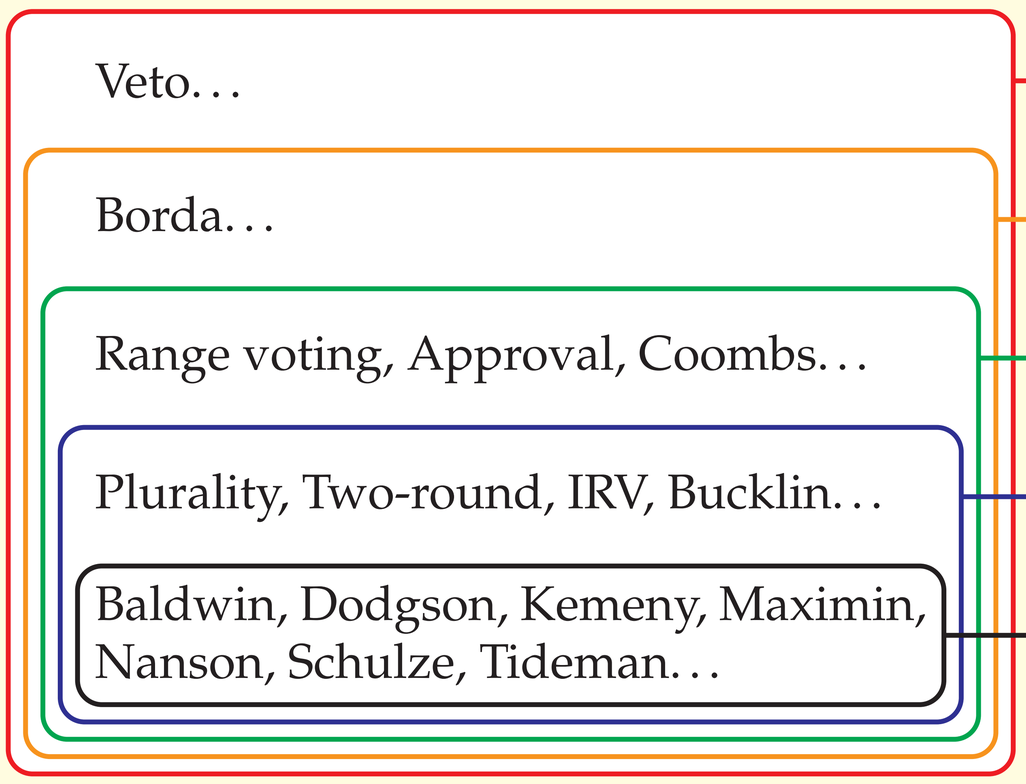
Criteria for voting systems



Set of voting systems

Informed majority coalition criterion (InfMC)
A majority may choose the outcome when they know the other votes.

Ignorant majority coalition criterion (IgnMC)
A majority may choose the outcome.

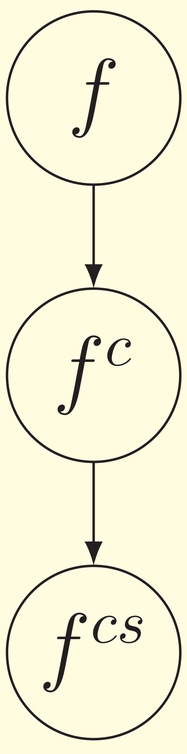
Majority favorite criterion (MF)
Elects a candidate when she is preferred by a majority.

Condorcet criterion (Cond)
Elects the Condorcet winner when there is one.

Goal: minimize the manipulability rate

$$\rho(f) = \mathbb{P}(\text{voting system } f \text{ is manipulable})$$

Transformations



Initial voting system f

Condorcification of f
- Elects Condorcet winner when she exists.
- Otherwise, same outcome as f.

Best slice of f^c
- Depends only on orders of preference.
- Meets the Condorcet criterion.

Condorcification Thm.

If f meets **InfMC**:

$$\rho(f^c) \leq \rho(f).$$

Slicing theorem

If voters are independent:

$$\rho(f^{cs}) \leq \rho(f^c).$$

Consequences

To minimize manipulability while keeping **InfMC**, one may restrict to voting systems that:

- **Depend only on orders of preference**,
- And **meet the Condorcet criterion**.